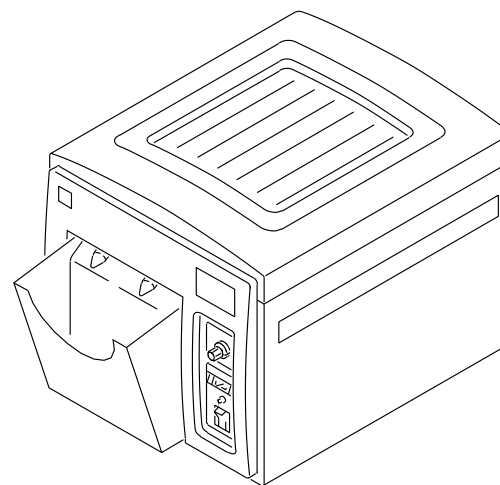




HEALTH IMAGING

Publication No. 3E0822
29OCT99

PERIODIC MAINTENANCE for the *Kodak Min-R* MAMMOGRAPHY PROCESSOR Service Code: 3752



H176_0001AC

PLEASE NOTE The information contained herein is based on the experience and knowledge relating to the subject matter gained by Eastman Kodak Company prior to publication.

No patent license is granted by this information.

Eastman Kodak Company reserves the right to change this information without notice, and makes no warranty, express or implied, with respect to this information. Kodak shall not be liable for any loss or damage, including consequential or special damages, resulting from any use of this information, even if loss or damage is caused by Kodak's negligence or other fault.

 Warning

To avoid hazardous conditions, keep floors and floor coverings around your Processor and associated drains clean and dry at all times. Any accumulation of fluids from mixing tanks, drain lines, etc., should be cleaned up immediately. In the event of an accumulation of liquid due to backup, overflow, or other malfunctions of the drain associated with your Processor, call a plumber or other contractor to correct any problem with the drain. Kodak accepts no responsibility or liability whatsoever for the serviceability of any drain connected to or associated with a Processor. Such drains are the sole responsibility of the customer.

Radio Interference

 Caution

This equipment generates, uses, and can radiate radio-frequency energy. If the equipment is not installed and used according to the instructions, it might cause interference to radio communications. The equipment has been tested and found to comply with the limits for a *Class A* computing device pursuant to Subpart J of Part 15 of the FCC Rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at the user's own expense will be required to take whatever measures may be required to correct the interference.

This digital apparatus does not exceed the *Class A* limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Table of Contents

Description	Page
Introduction and Cleaning Materials	3
Maintenance Procedures	4
Monthly Procedures	4
DETECTOR SWITCHES	4
DETECTOR CROSSOVER ASSEMBLY	4
DEVELOPER/FIXER and FIXER/WASH CROSSOVER ASSEMBLIES	5
RACK ASSEMBLIES	7
DRYER	10
MAIN DRIVE	11
PLUMBING	11
RECIRCULATION PUMPS	12
DEVELOPER FILTER	13
Temperature of the Developer Solution	13
Chemical Replenishment	14
INTERLOCK SWITCHES	14
Lubrication Procedure and Schedule	16

Section 1: Introduction and Cleaning Materials

This maintenance procedure publication includes additional procedures not in the OPERATOR MANUAL, Publication No. 3E0815. The following requirements are for PROCESSORS installed according to the SITE SPECIFICATIONS, Publication No. 3E0816. More maintenance might be necessary because of site characteristics or frequency of use.

For reliable operation of the PROCESSOR, cleaning, adjusting, and lubrication of parts must be correctly executed.



Caution

When cleaning **all** of the ROLLERS and RACKS, do **not** use rough materials that can scratch. The DEVELOPER ROLLER is highly sensitive to damage.

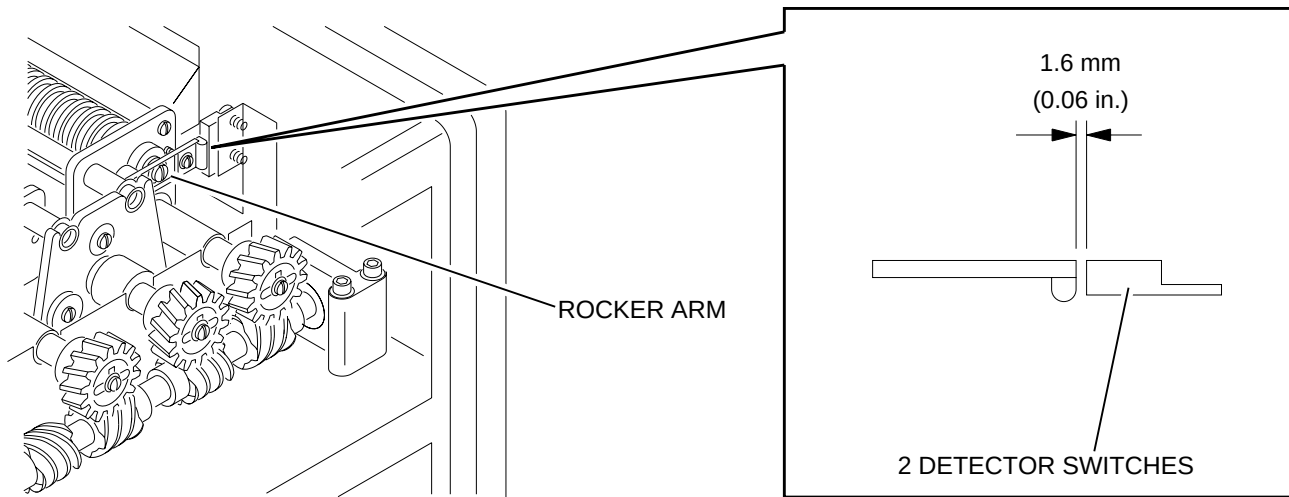
The materials necessary to do the maintenance procedures include:

- soft BRUSH
- LINT-FREE CLOTH or SPONGE
- DEVELOPER SYSTEM CLEANER and NEUTRALIZER, Catalog No. 843 4615
- FIXER/WASH SYSTEM CLEANER, Catalog No. 139 5110
- NLGI - No. 2 LITHIUM BALL AND ROLLER BEARING GREASE TL-2324
- LIGHT OIL - Example: SAE No. 20 MOTOR OIL TL-2244
- ADJUSTMENTS AND REPLACEMENTS, Publication No. 3E0818

Section 2: Maintenance Procedures

Monthly Procedures

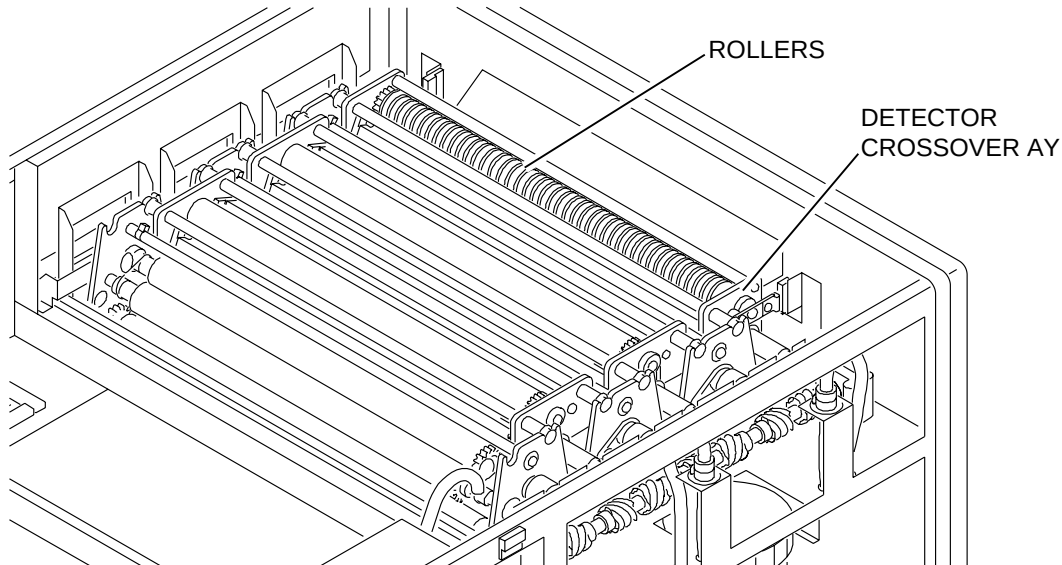
DETECTOR SWITCHES



H172_1036BCB
H172_1036BA

- [1] Check that the 2 DETECTOR SWITCHES operate the REPLENISHMENT PUMP.
- [2] If necessary, do the adjustment procedure for the DETECTOR SWITCHES. See the ADJUSTMENTS AND REPLACEMENTS, Publication No. 3E0818.

DETECTOR CROSSOVER ASSEMBLY



H176_0022BCC
H176_0022BC



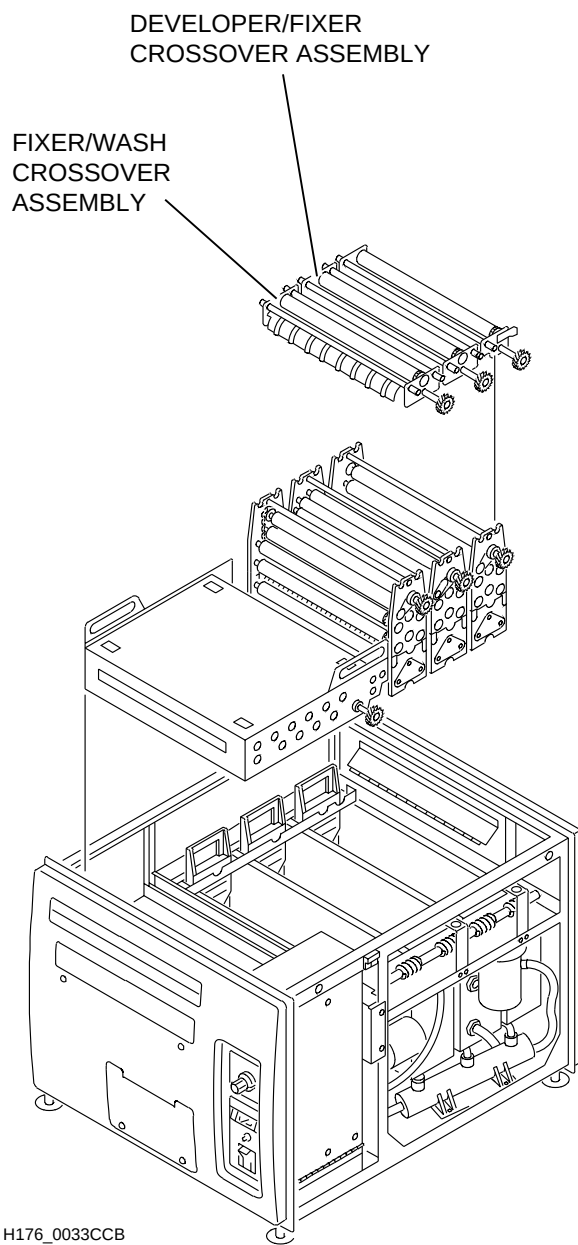
Caution

Prevent damage. Do not use rough materials that will scratch.

- [1] Use a damp, lint-free CLOTH or a SPONGE to clean the ROLLERS.
- [2] Check that the ROCKER ARM moves freely and does not have excessive wear.
- [3] Clean the ROCKER ARM if it does not move freely. Install a new ROCKER ARM if it has excessive wear.

[4] Check the DETECTOR CROSSOVER ASSEMBLY:

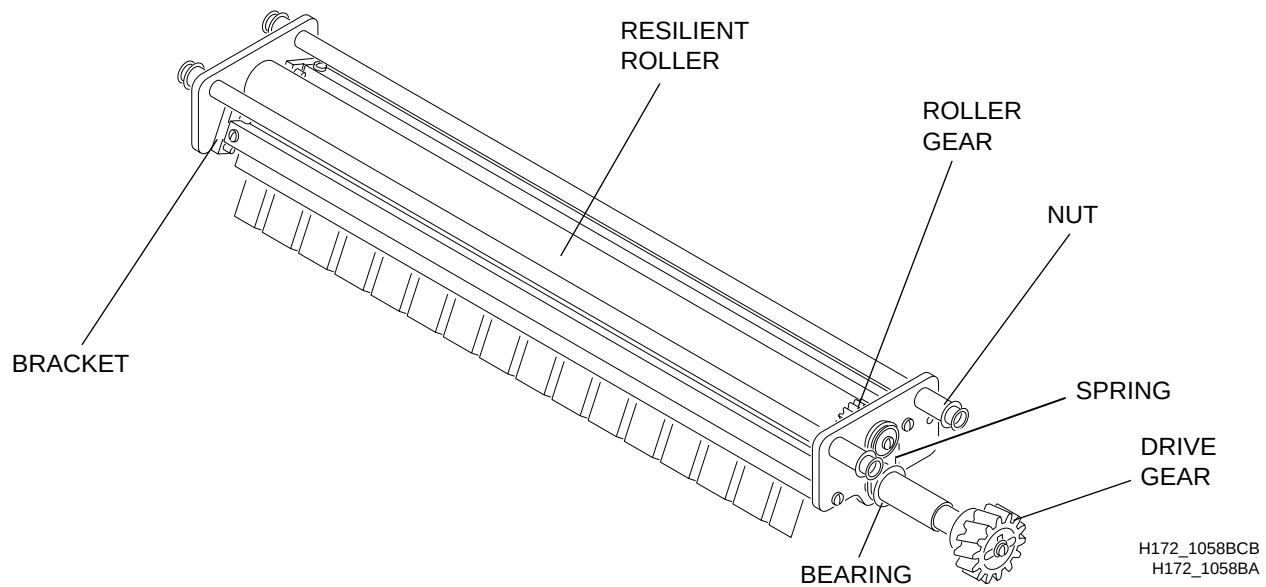
- for squareness - see the ADJUSTMENTS AND REPLACEMENTS, Publication No. 3E0818
- is seated correctly

DEVELOPER/FIXER and FIXER/WASH CROSSOVER ASSEMBLIES**[1] Remove:**

- DEVELOPER/FIXER CROSSOVER ASSEMBLY
- FIXER/WASH CROSSOVER ASSEMBLY

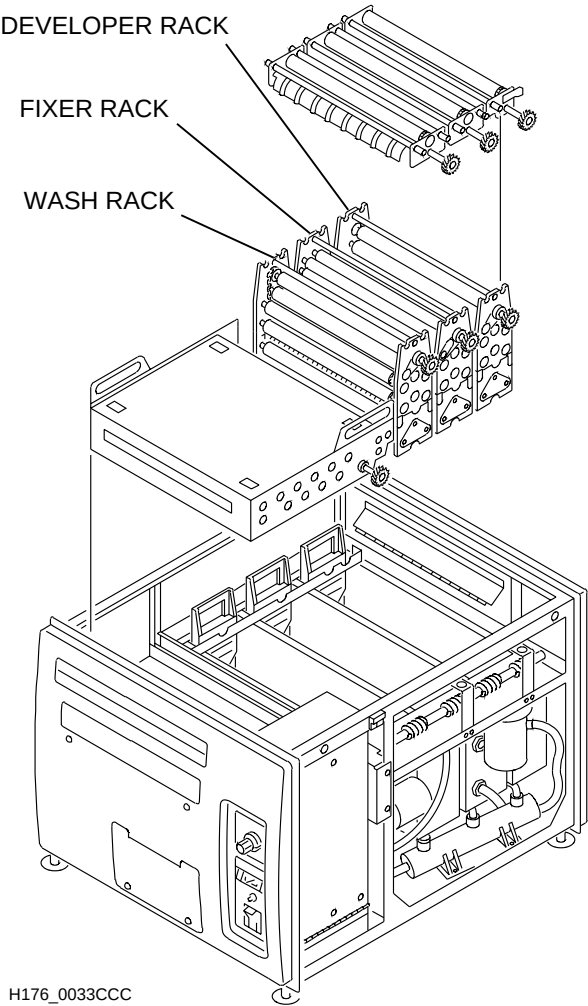
[2] Use warm water and a soft BRUSH to clean the CROSSOVER ASSEMBLIES, or use:

Solution	ASSEMBLY
DEVELOPER SYSTEM CLEANER and NEUTRALIZER, Catalog No. 843 4615	DEVELOPER/FIXER CROSSOVER
FIXER/WASH SYSTEM CLEANER, Catalog No. 139 5110	FIXER/WASH CROSSOVER



- [3] Check that the surface of the RESILIENT ROLLER is smooth.
- [4] If the RESILIENT ROLLER is not smooth, install a new ROLLER.
- [5] Check the following components for wear or broken parts. Install replacements if necessary.
- SPRINGS
 - ROLLER GEARS
 - BEARING
 - BRACKET
 - NUTS
 - DRIVE GEAR
- [6] Check the CROSSOVER ASSEMBLIES for squareness. See the ADJUSTMENTS AND REPLACEMENTS, Publication No. 3E0818.

RACK ASSEMBLIES



H176_0033CCC
H176_0033CC

- [1] Remove:
- DEVELOPER RACK
 - FIXER RACK
 - WASH RACK

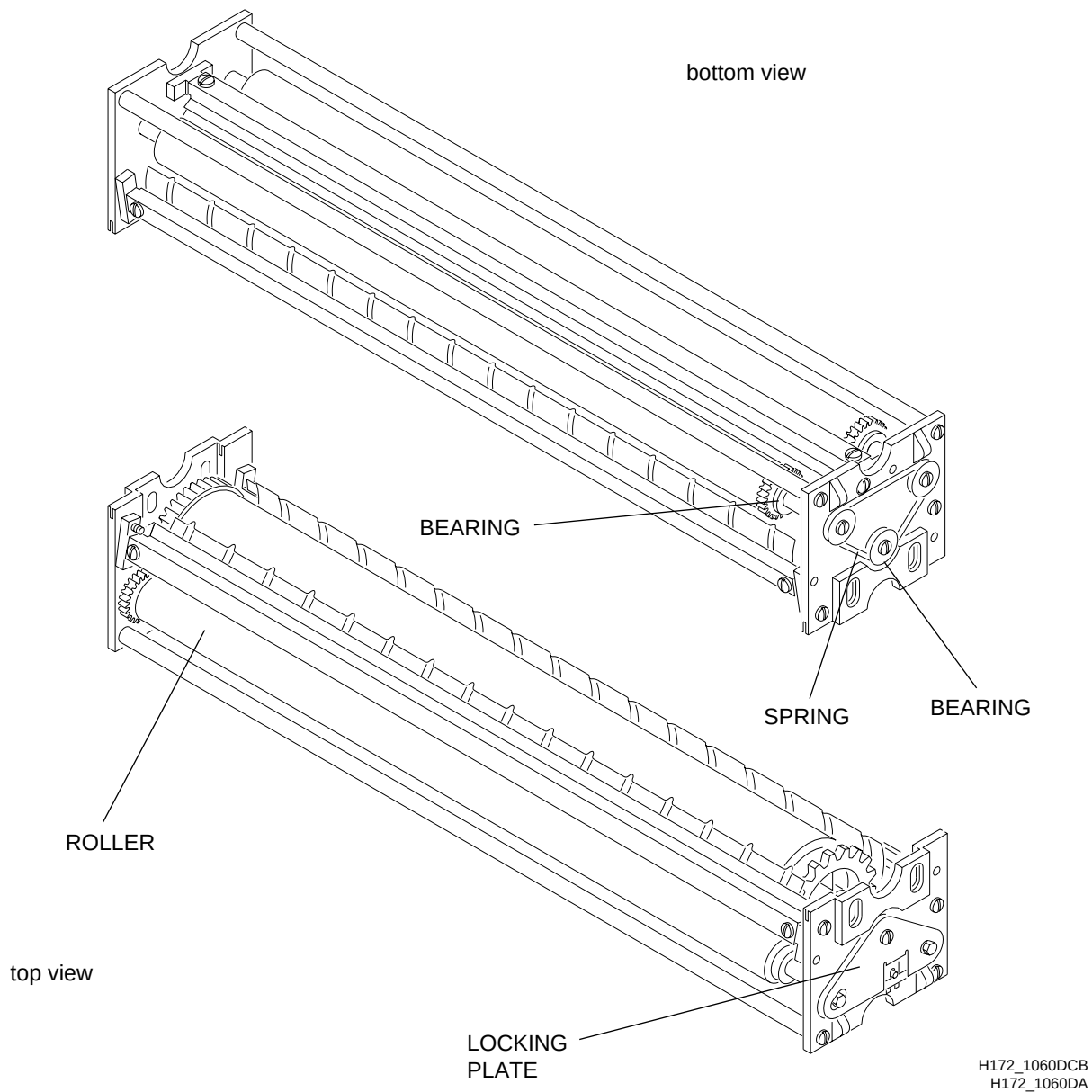


Caution

Prevent damage. Do not use rough materials that will scratch.

- [2] Use warm water and a soft BRUSH to clean the RACKS, or use:

Solution	RACK
DEVELOPER SYSTEM CLEANER and NEUTRALIZER Catalog No. 843 4615	DEVELOPER
FIXER/WASH SYSTEM CLEANER Catalog No. 139 5110	FIXER
	WASH



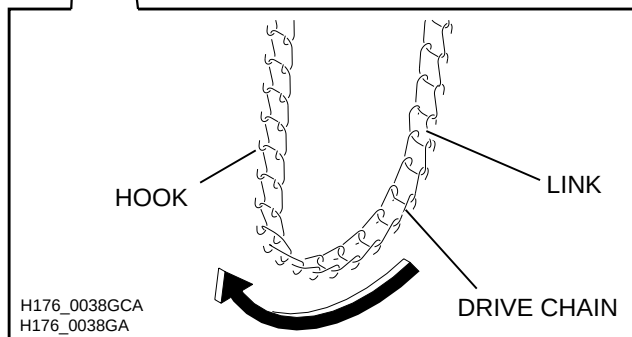
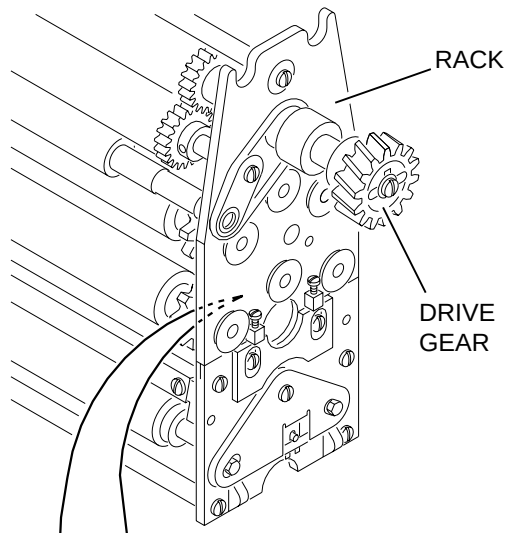
Important

The ROLLERS might change color with time. This is normal.

[3] Check:

- SPRINGS for correct tension and for wear
- ROLLERS and BEARINGS rotate freely
- ROLLERS move freely in the LOCKING PLATES
- surfaces of the ROLLERS are smooth

[4] Install replacement SPRINGS and ROLLERS if necessary.



- [5] Manually rotate the DRIVE GEAR to check the LINKS of the DRIVE CHAIN.



Important

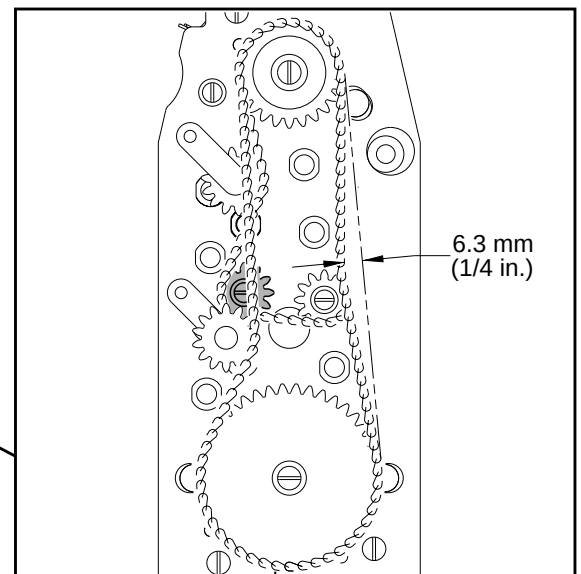
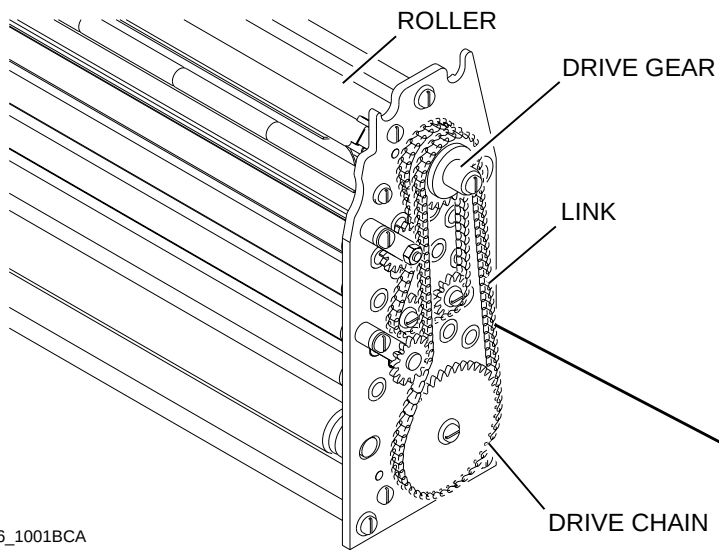
The tension of the DRIVE CHAINS must be correct.

- If the DRIVE CHAIN is too tight, the ROLLERS will bind and cause wear.
- If the DRIVE CHAIN is too loose, the ROLLERS will not move smoothly.

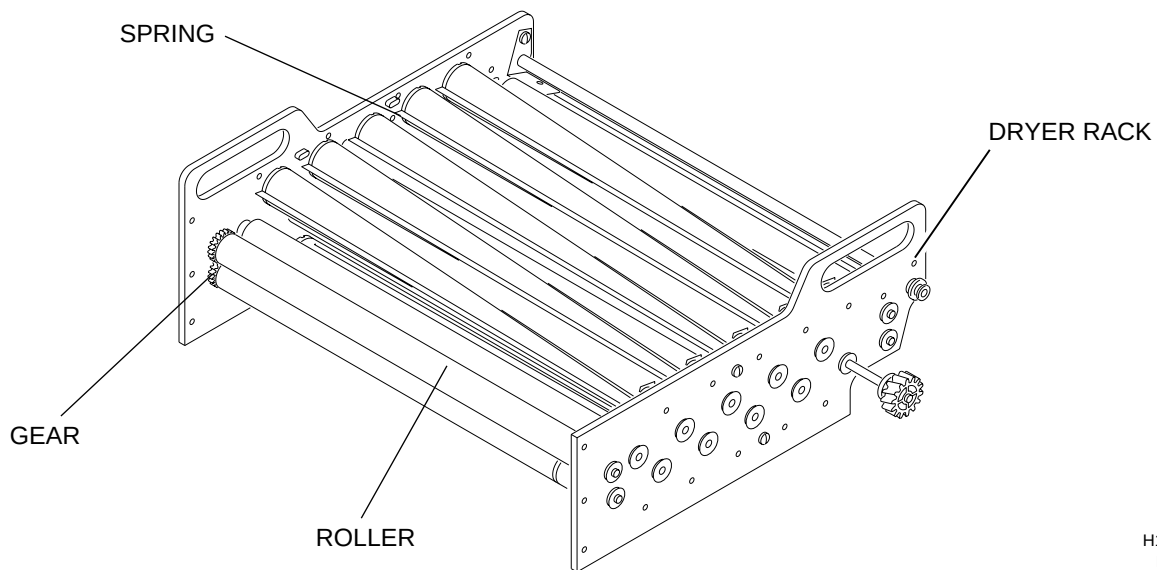
- [6] Check the tension of the DRIVE CHAINS.

- [7] If necessary, do the following procedures using the ADJUSTMENTS AND REPLACEMENTS, Publication No. 3E0818:

- “Adjusting the Tension of the DRIVE CHAIN - DEVELOPER RACKS”
- “Adjusting the Tension of the DRIVE CHAIN - FIXER and WASH RACKS”



DRYER



H172_1059BCB
H172_1059BA

[1] Remove the DRYER RACK.

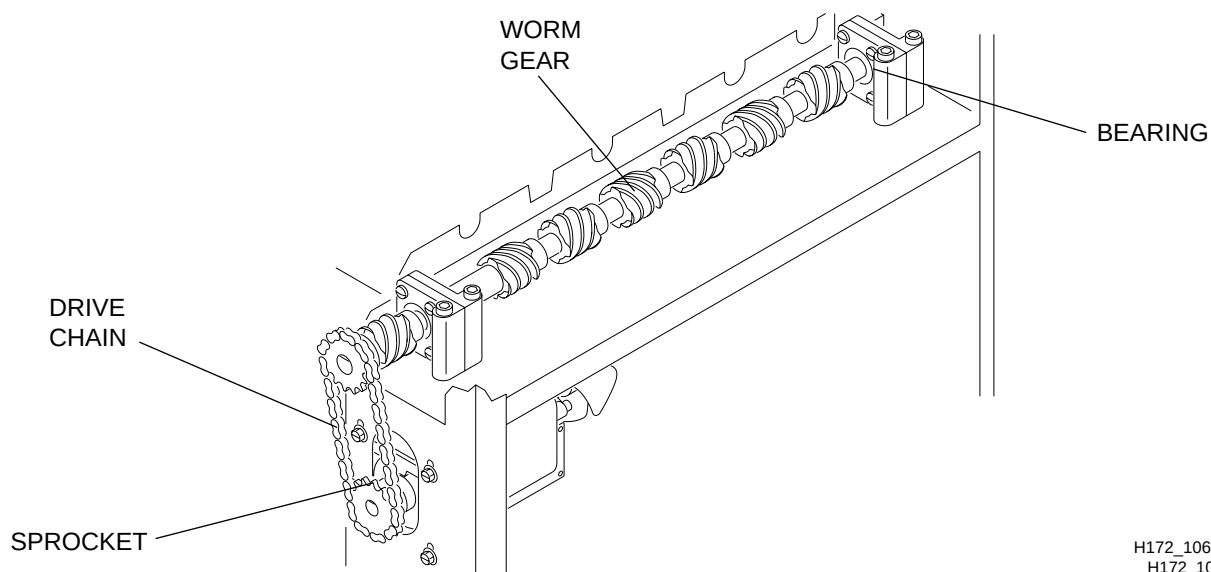
[2] Check:

- for broken GEARS
- SPRINGS for correct tension and wear
- temperature of the DRYER - if necessary, do the procedure "Adjusting the Temperature" in the ADJUSTMENTS AND REPLACEMENTS, Publication No. 3E0818

[3] If necessary, install new:

- GEARS
- ROLLERS
- SPRINGS

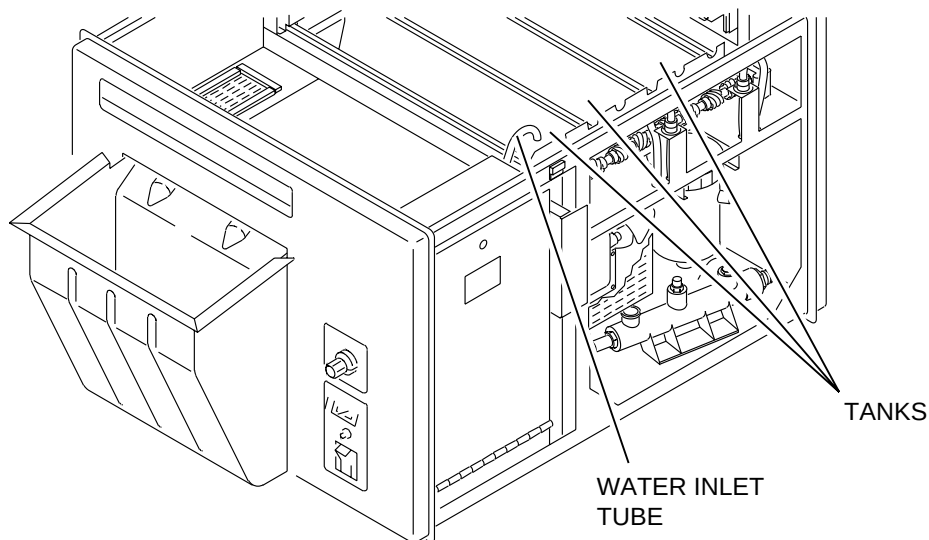
MAIN DRIVE



- [1] Check the DRIVE CHAIN for wear.
- [2] Install a new DRIVE CHAIN if necessary.
- [3] Check the tension of the DRIVE CHAIN.
- [4] If necessary:
 - do the procedure “Adjusting the MAIN DRIVE CHAIN” in the ADJUSTMENTS AND REPLACEMENTS, Publication No. 3E0818
 - apply lubricant to the DRIVE CHAIN - see [Page 16](#)
- [5] Check:
 - BEARINGS for wear
 - SPROCKETS for wear and sharp ends
 - WORM GEARS for wear and rough edges
- [6] If necessary, install new:
 - BEARINGS
 - SPROCKETS
 - WORM GEARS

PLUMBING

- [1] Check the following parts and connections for leakage:
 - RECIRCULATION PUMPS
 - VALVES
 - TUBING
 - TANKS
- [2] Check that the temperature of the water supply is 4-30°C (40-85°F).



H172_1062BCB
H172_1062BC

[3] Check the flow rate of the water supply:

(a) Drain and clean the TANKS with warm water.

(b) Remove:

- FIXER/WASH CROSSOVER
- DRYER RACK
- WASH RACK

(c) Start the water supply.

(d) Measure the flow rate at the WATER INLET TUBE. The rate should be 946 mL (1/4 gal) per minute, +10%, -0%.

RECIRCULATION PUMPS



Caution

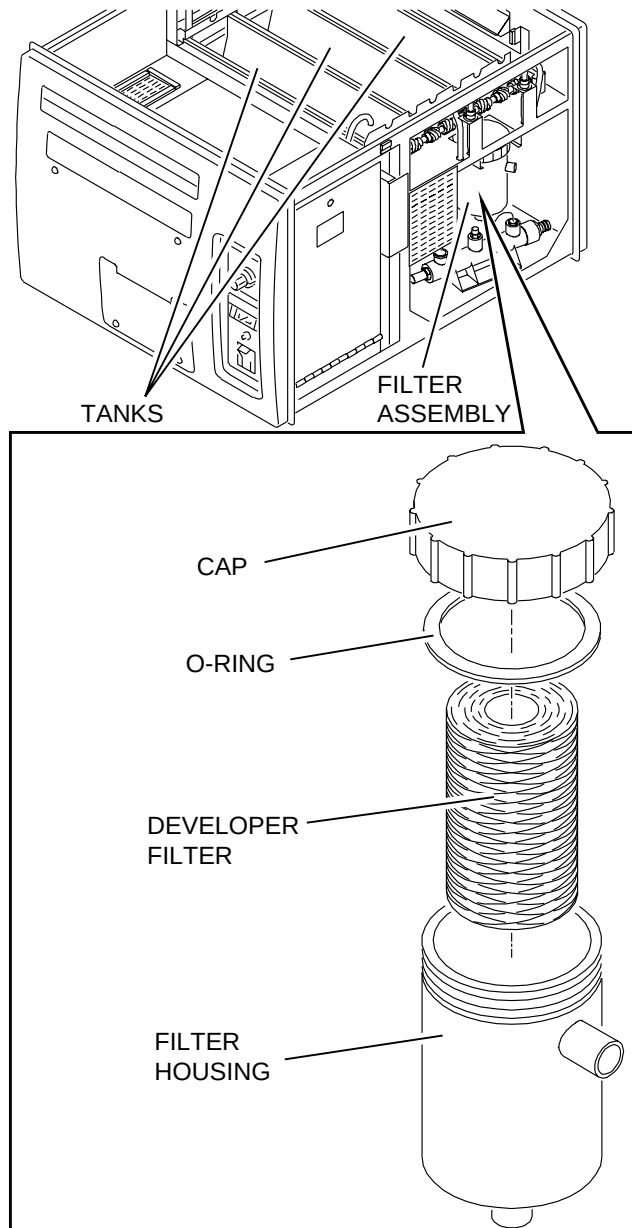
Do not operate the RECIRCULATION PUMP if the TANKS are empty.

[1] Actuate the RECIRCULATION PUMPS.

[2] Check for:

- leakage
- agitation of the solution in the TANKS
- excessive noise from the RECIRCULATION PUMPS

DEVELOPER FILTER



H172_1026CCB
H172_1026CC



Important

You must install a new DEVELOPER FILTER monthly or after approximately 1000 sheets of film have been processed.

- [1] Soak the new DEVELOPER FILTER in warm water for 30 seconds.
- [2] Pull the FILTER ASSEMBLY outside of the PROCESSOR.
- [3] Hold the FILTER ASSEMBLY above the solutions during the procedure to prevent draining the solutions from the TANKS.
- [4] Remove:
 - CAP from the FILTER HOUSING
 - old DEVELOPER FILTER and discard



Important

The O-RING must be seated correctly in the CAP.

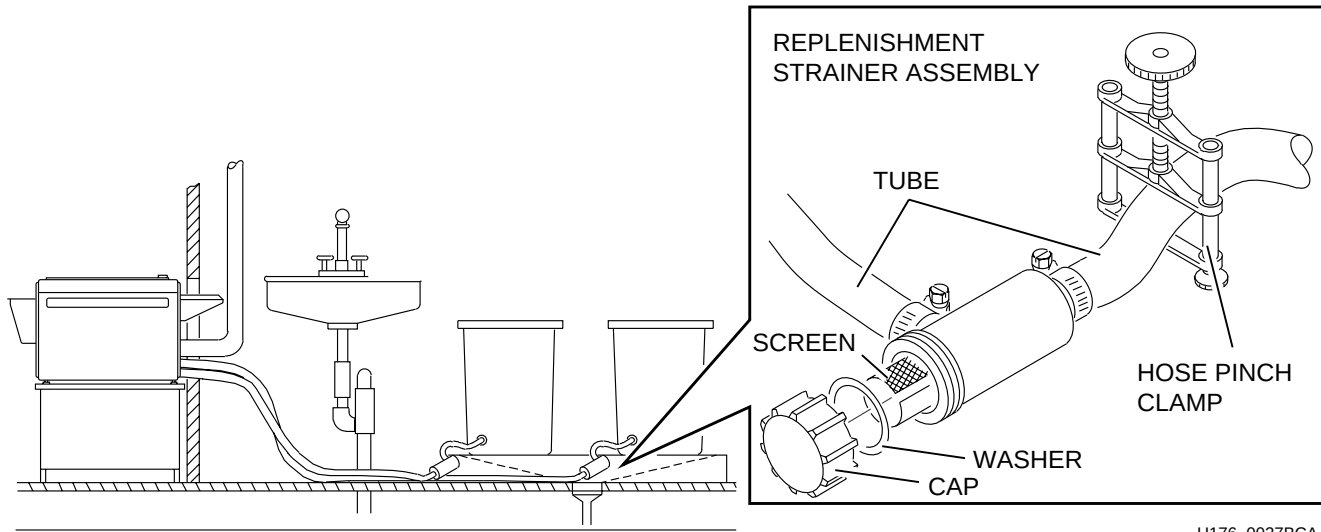
- [5] Assemble and install the FILTER ASSEMBLY into the PROCESSOR.

Temperature of the Developer Solution

- [1] Do the procedure "Adjusting the Developer Temperature". See the ADJUSTMENTS AND REPLACEMENTS, Publication No. 3E0818

Chemical Replenishment

- [1] Check the replenishment rates. Do the procedure "Checking the Replenishment Rates". See the ADJUSTMENTS AND REPLACEMENTS, Publication No. 3E0818.

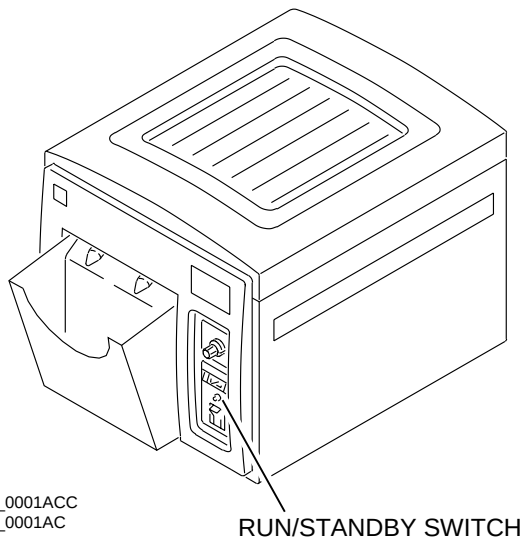


H176_0027BCA
H176_0027BC

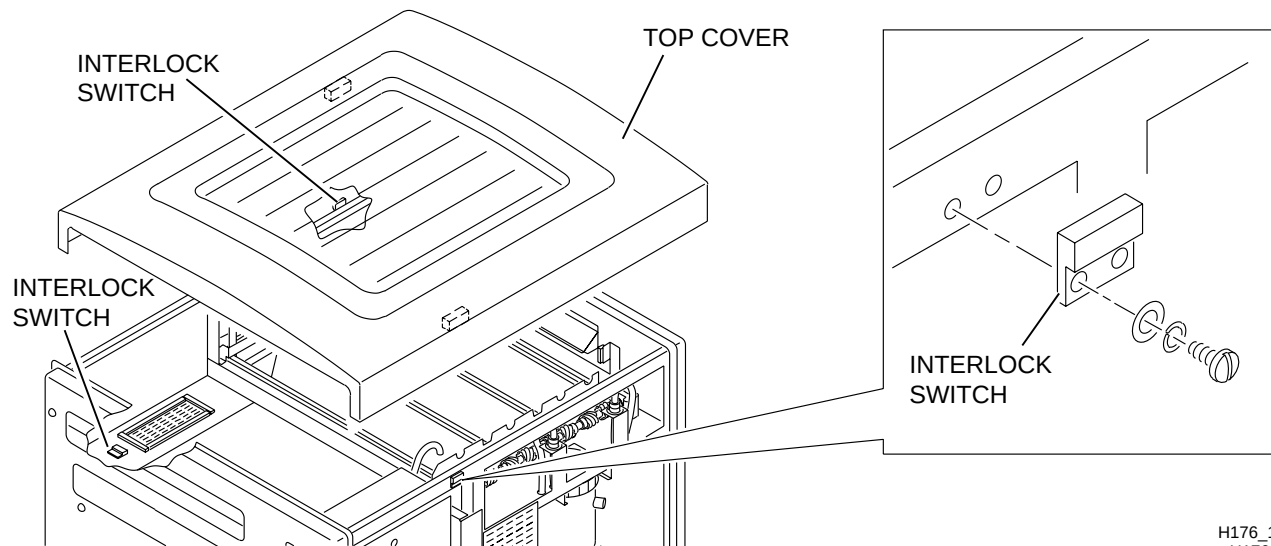
- [2] To clean the REPLENISHMENT STRAINER ASSEMBLY:
- (a) Place the HOSE PINCH CLAMP TL-2170 on the TUBES to stop the replenishment flow.
 - (b) Remove:
 - CAP
 - SCREEN
 - (c) Clean debris from the SCREEN. Use a soft BRUSH and warm water.
 - (d) Install:
 - SCREEN
 - CAP
 - (e) Check that the WASHER is seated into the CAP.

INTERLOCK SWITCHES

- [1] Press the RUN/STANDBY SWITCH.



H176_0001ACC
H176_0001AC

**Warning**

Moving parts.

- [2] Remove the TOP COVER.
- [3] Check that the following have stopped operating:
 - MAIN DRIVE MOTOR
 - BLOWER MOTOR
 - DRYER HEATER
- [4] If the parts do not stop when the TOP COVER is removed, install new INTERLOCK SWITCHES.

Lubrication Procedure and Schedule



Warning

Dangerous Voltage

[1] De-energize and disconnect the main power.



Caution

Do not allow the lubricants to:

- make contact with the CROSSOVER or RACK ASSEMBLIES
- drip into the TANKS

[2] Apply lubricant:

Part	Schedule	Lubricant	Procedure
MAIN DRIVE CHAIN	As necessary, check monthly	NLGI - No. 2 LITHIUM BALL AND ROLLER BEARING GREASE TL-2324	Apply to the surface of the CHAIN.
RECIRCULATION PUMPS	Every 6 months	LIGHT OIL Example: SAE No. 20 MOTOR OIL TL-2244	Apply drops of OIL in the OIL HOLES.
DRYER BLOWER BEARINGS	Every 6 months	LIGHT OIL Example: SAE No. 20 MOTOR OIL TL-2244	Apply drops of OIL in the OIL HOLES.



Note

No lubrication is necessary for:

- MAIN DRIVE MOTOR
- GEAR HOUSING of the MAIN DRIVE MOTOR

Publication History

Print Date	Pub No.	ECO No.	Affected Pages	Filename	Notes
29OCT99	3E0822	4014-508	All	pm3752_1_29oct99.fm	First Printing

Kodak and Min-R are trademarks.